FIG.1

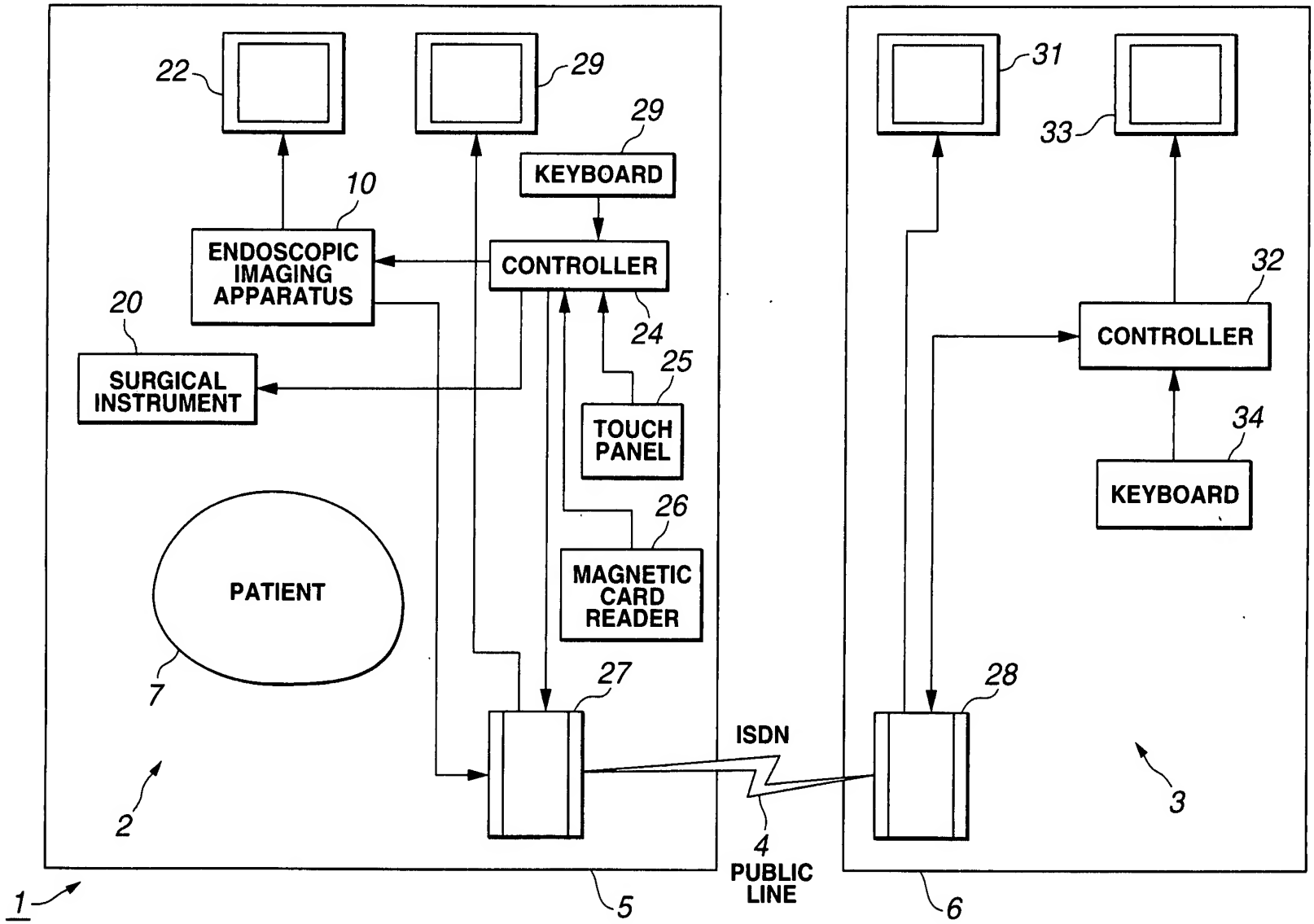

22
29
29
KEYBOARD
10
ENDOSCOPIC IMAGING APPARATUS
CONTROLLER
20
SURGICAL INSTRUMENT
24
25
TOUCH PANEL
26
MAGNETIC CARD READER
PATIENT
7
27
28
ISDN
2
3
4
PUBLIC LINE
1
5
6
31
33
32
CONTROLLER
34
KEYBOARD

FIG.2

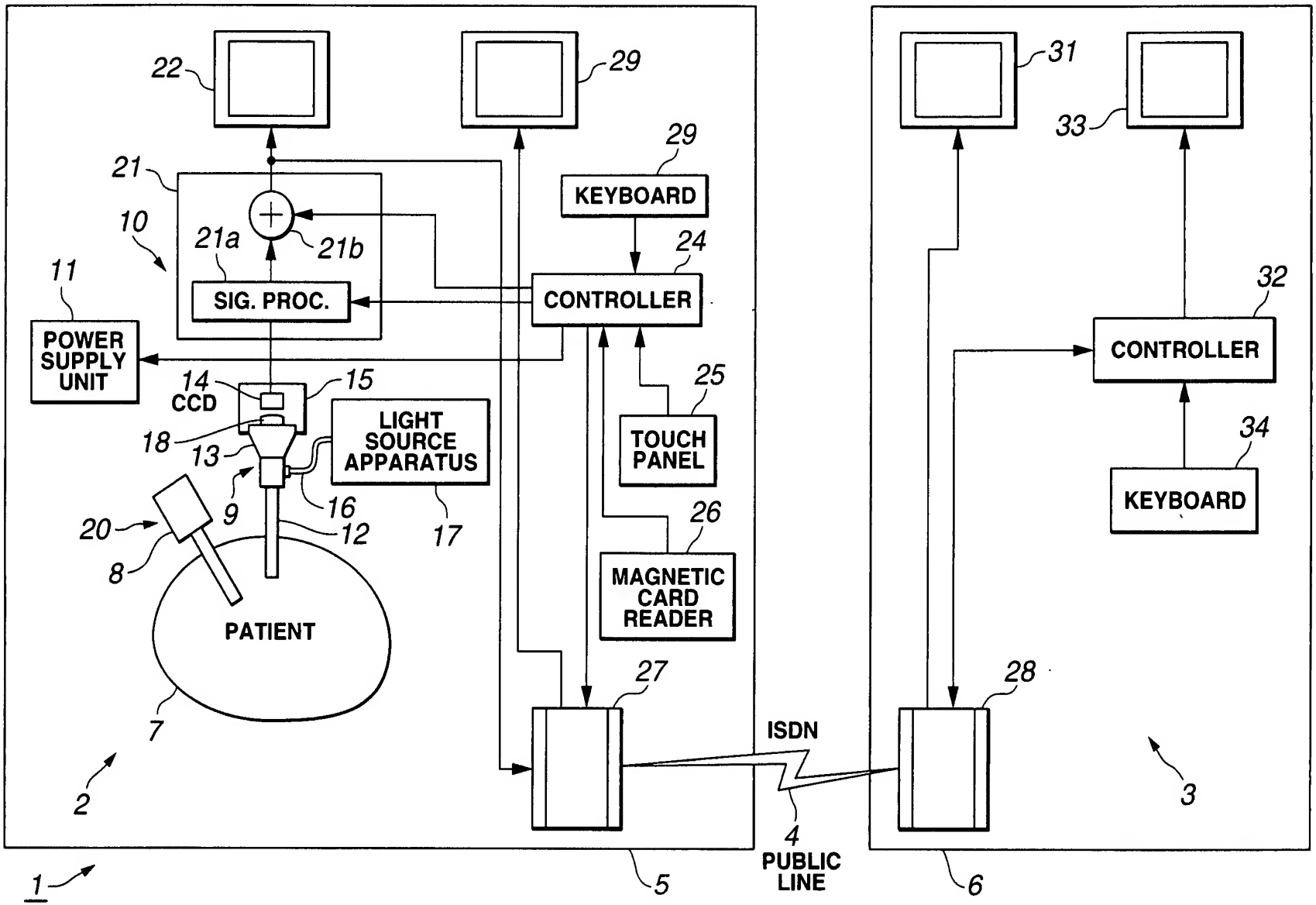

22
29
21
10
21a
21b
SIG. PROC.
11
POWER SUPPLY UNIT
14
CCD
15
18
13
9
16
12
17
LIGHT SOURCE APPARATUS
20
8
PATIENT
7
2
1
29
KEYBOARD
24
CONTROLLER
25
TOUCH PANEL
26
MAGNETIC CARD READER
27
5
ISDN
4
PUBLIC LINE
31
33
32
CONTROLLER
34
KEYBOARD
28
6
3

FIG.3

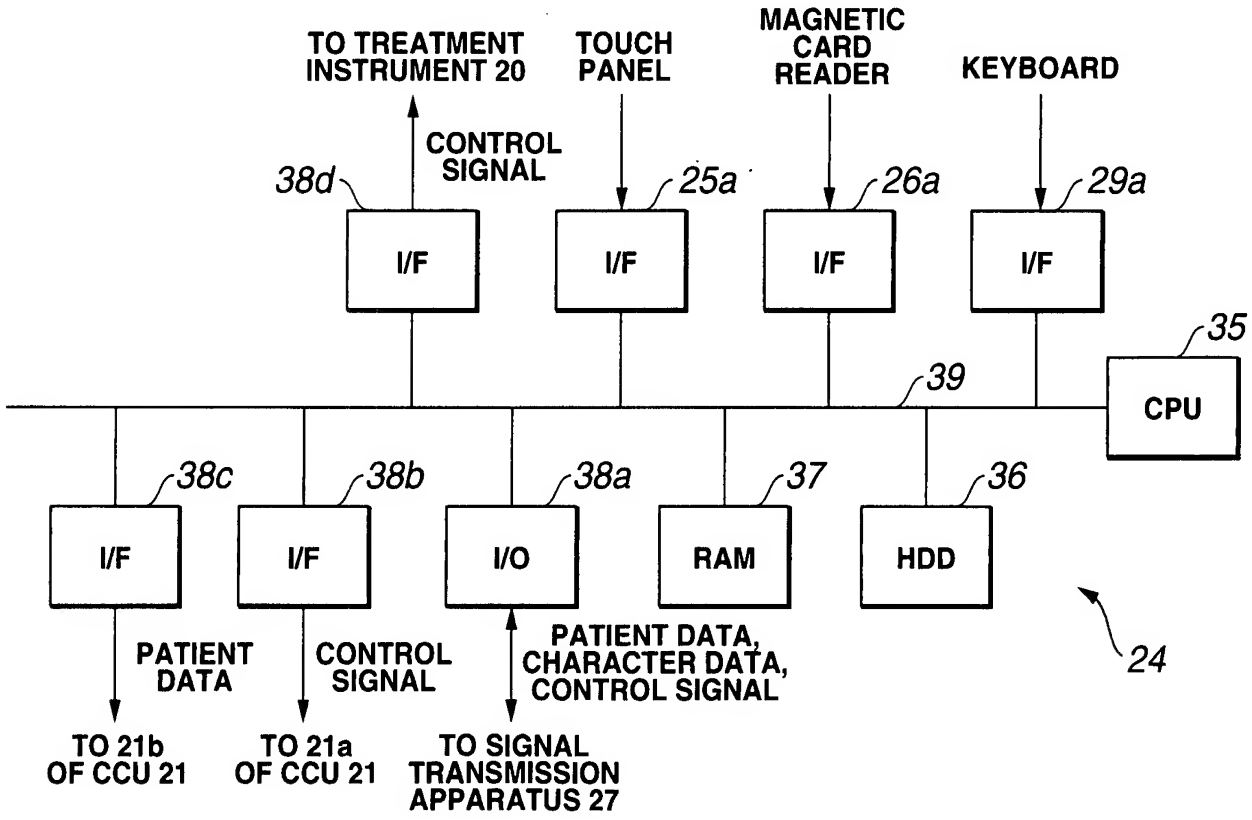

TO TREATMENT INSTRUMENT 20
TOUCH PANEL
MAGNETIC CARD READER
KEYBOARD
CONTROL SIGNAL
38d
25a
26a
29a
I/F
I/F
I/F
I/F
35
39
CPU
38c
38b
38a
37
36
I/F
I/F
I/O
RAM
HDD
24
PATIENT DATA
CONTROL SIGNAL
PATIENT DATA, CHARACTER DATA, CONTROL SIGNAL
TO 21b OF CCU 21
TO 21a OF CCU 21
TO SIGNAL TRANSMISSION APPARATUS 27

FIG.4

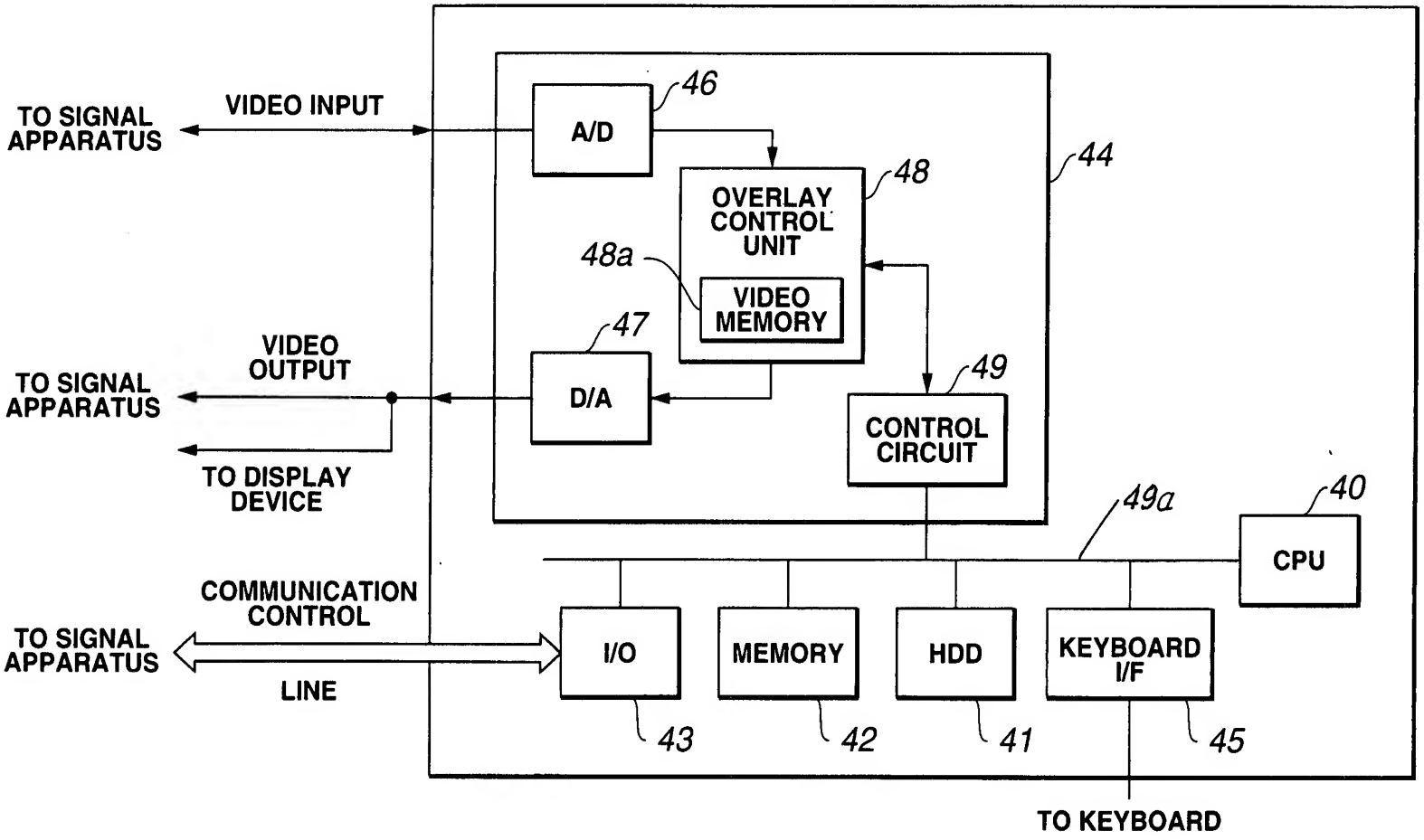

TO SIGNAL APPARATUS
VIDEO INPUT
A/D
46
44
OVERLAY CONTROL UNIT
48
48a
VIDEO MEMORY
47
VIDEO OUTPUT
TO SIGNAL APPARATUS
D/A
49
CONTROL CIRCUIT
TO DISPLAY DEVICE
49a
40
CPU
COMMUNICATION CONTROL
TO SIGNAL APPARATUS
LINE
I/O
MEMORY
HDD
KEYBOARD I/F
43
42
41
45
TO KEYBOARD

FIG.5

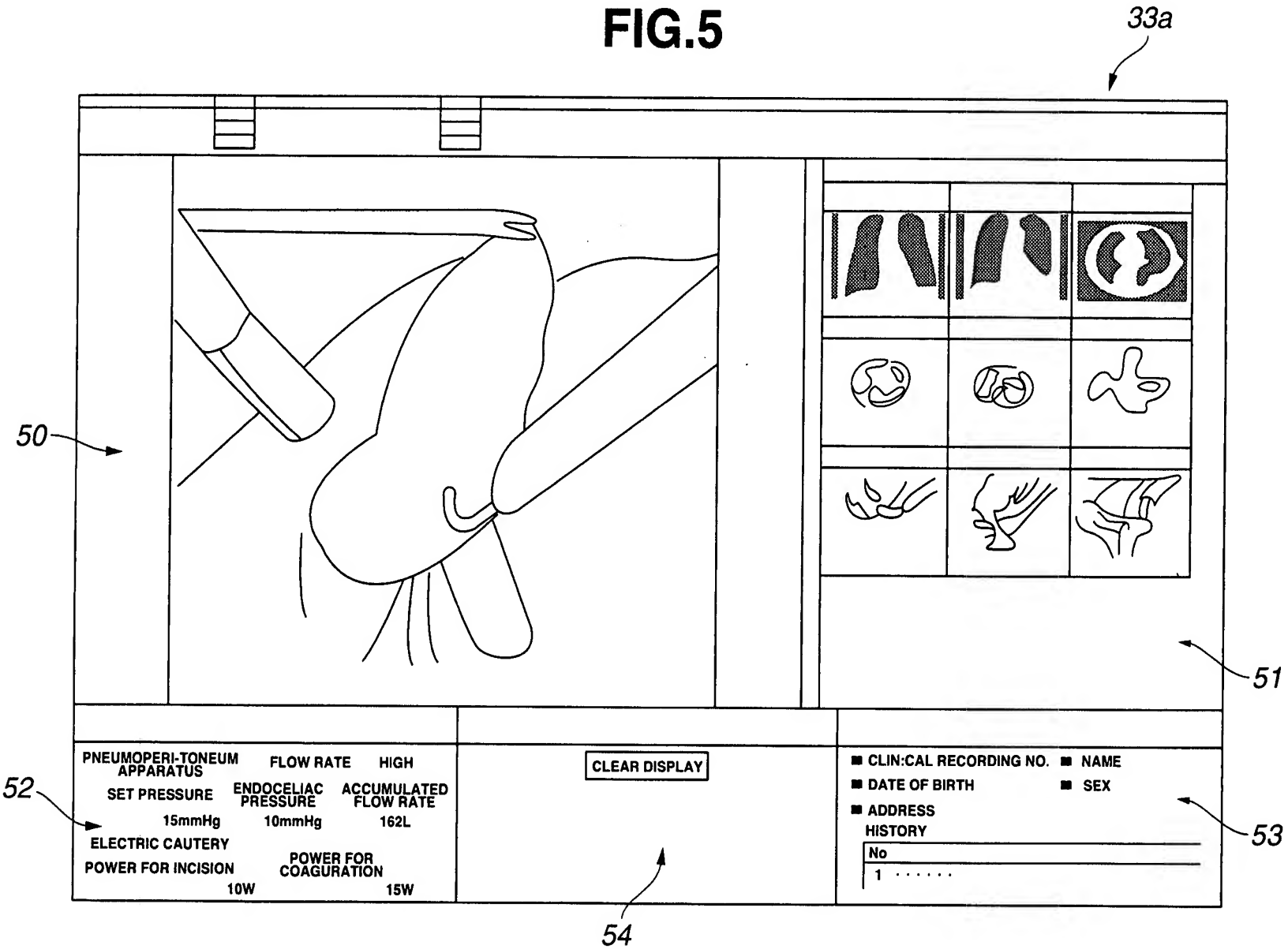

33a
50
51
52
53
54
PNEUMOPERI-TONEUM APPARATUS
FLOW RATE
HIGH
SET PRESSURE
ENDOCELIAC PRESSURE
ACCUMULATED FLOW RATE
15mmHg
10mmHg
162L
ELECTRIC CAUTERY
POWER FOR INCISION
POWER FOR COAGURATION
10W
15W
CLEAR DISPLAY
CLIN:CAL RECORDING NO.
NAME
DATE OF BIRTH
SEX
ADDRESS
HISTORY
No
1 · · · · · ·

FIG.6

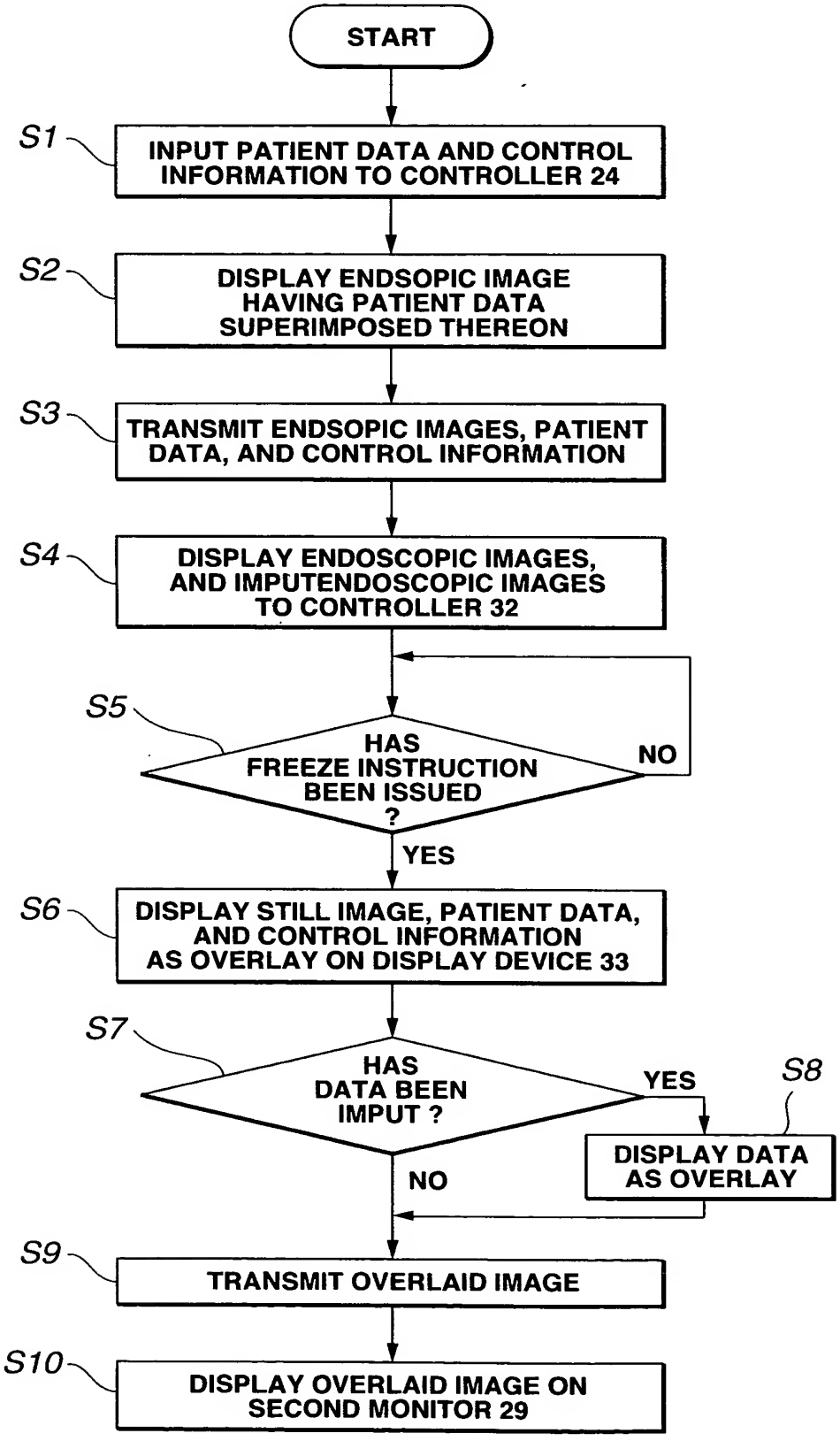

START
S1
INPUT PATIENT DATA AND CONTROL INFORMATION TO CONTROLLER 24
S2
DISPLAY ENDSOPIC IMAGE HAVING PATIENT DATA SUPERIMPOSED THEREON
S3
TRANSMIT ENDSOPIC IMAGES, PATIENT DATA, AND CONTROL INFORMATION
S4
DISPLAY ENDOSCOPIC IMAGES, AND IMPUTENDOSCOPIC IMAGES TO CONTROLLER 32
S5
HAS FREEZE INSTRUCTION BEEN ISSUED ?
NO
YES
S6
DISPLAY STILL IMAGE, PATIENT DATA, AND CONTROL INFORMATION AS OVERLAY ON DISPLAY DEVICE 33
S7
HAS DATA BEEN IMPUT ?
YES
S8
DISPLAY DATA AS OVERLAY
NO
S9
TRANSMIT OVERLAID IMAGE
S10
DISPLAY OVERLAID IMAGE ON SECOND MONITOR 29

FIG.7

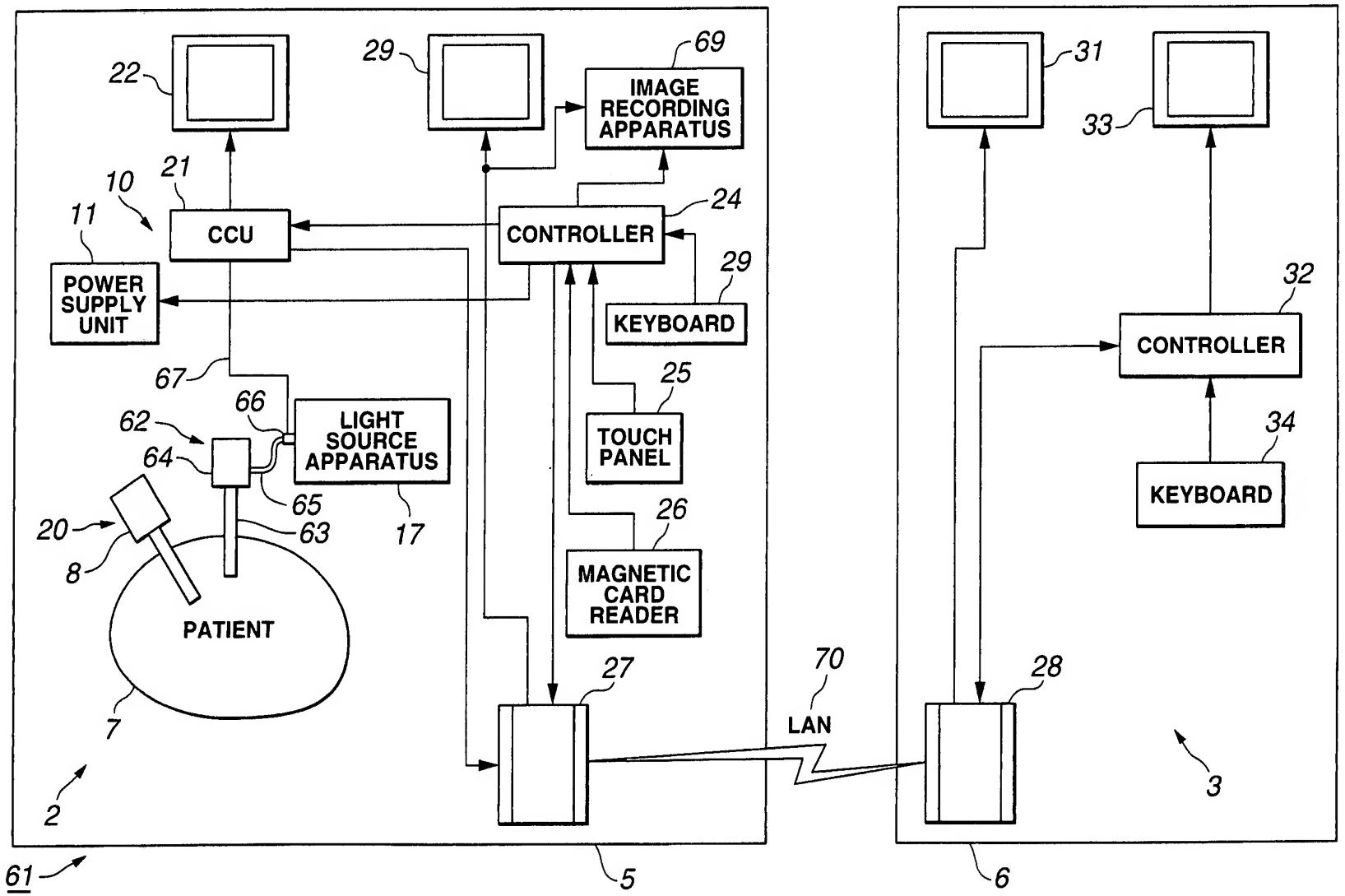

22
29
69
IMAGE RECORDING APPARATUS
31
33
10
21
11
CCU
CONTROLLER
24
POWER SUPPLY UNIT
29
KEYBOARD
32
CONTROLLER
67
66
62
64
LIGHT SOURCE APPARATUS
25
TOUCH PANEL
34
KEYBOARD
65
63
17
20
8
26
MAGNETIC CARD READER
PATIENT
27
70
28
LAN
7
2
3
61
5
6

FIG.8

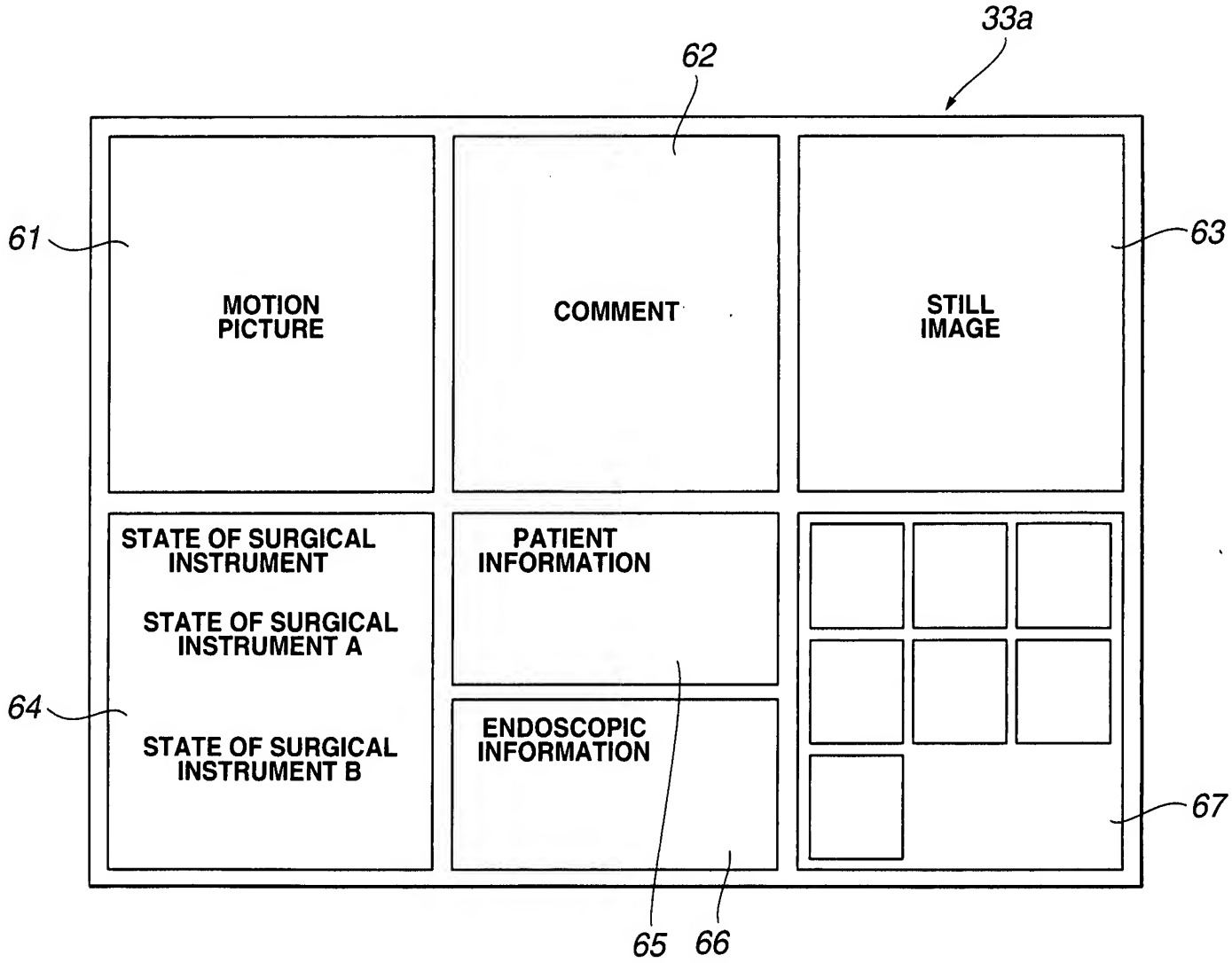

33a
62
61
63
MOTION PICTURE
COMMENT
STILL IMAGE
STATE OF SURGICAL INSTRUMENT
STATE OF SURGICAL INSTRUMENT A
64
STATE OF SURGICAL INSTRUMENT B
PATIENT INFORMATION
ENDOSCOPIC INFORMATION
67
65
66

FIG.9

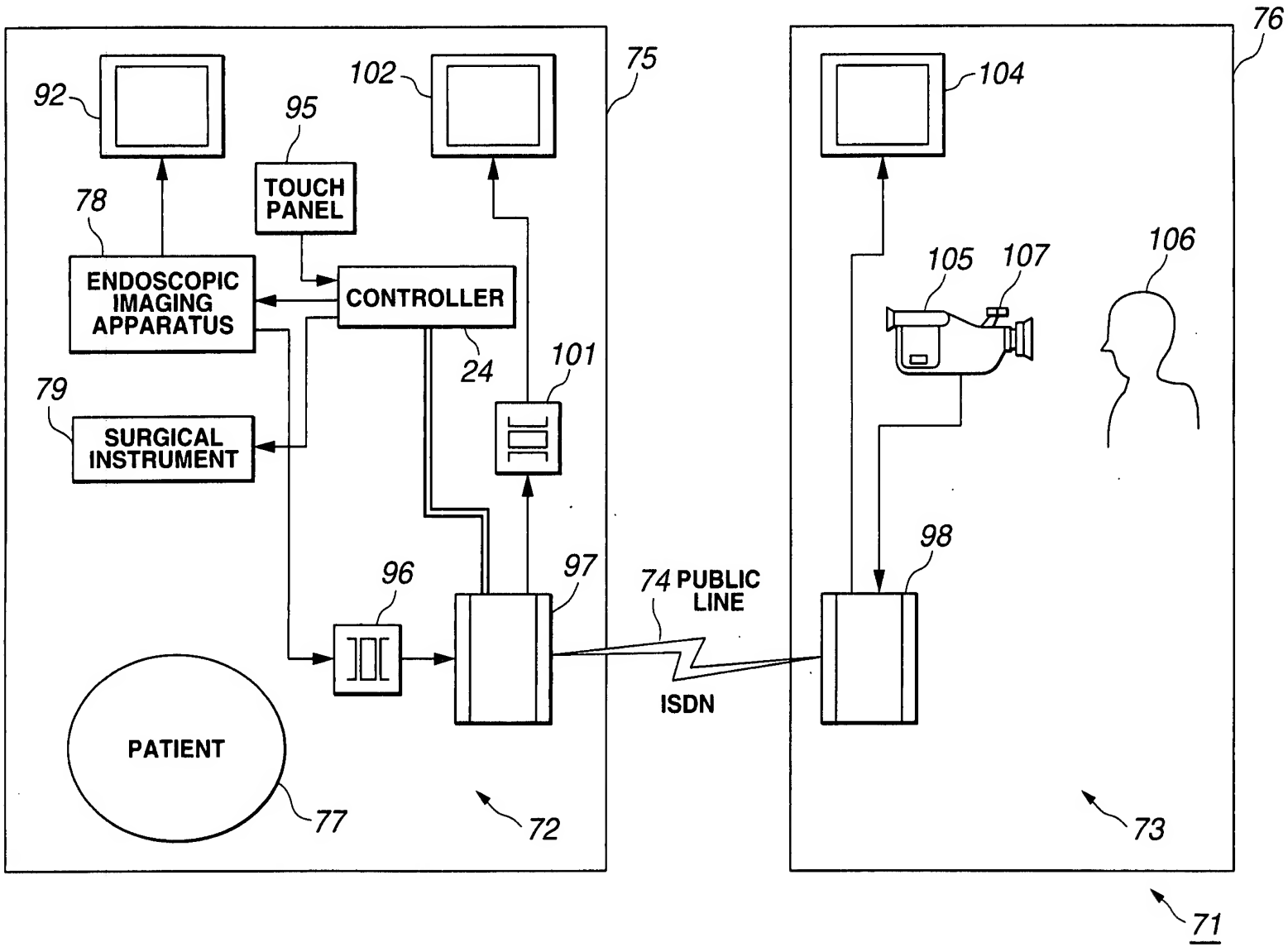

92
95
102
75
76
104
TOUCH PANEL
78
ENDOSCOPIC IMAGING APPARATUS
CONTROLLER
24
101
105
107
106
79
SURGICAL INSTRUMENT
98
96
97
74 PUBLIC LINE
ISDN
PATIENT
77
72
73
71

FIG.10

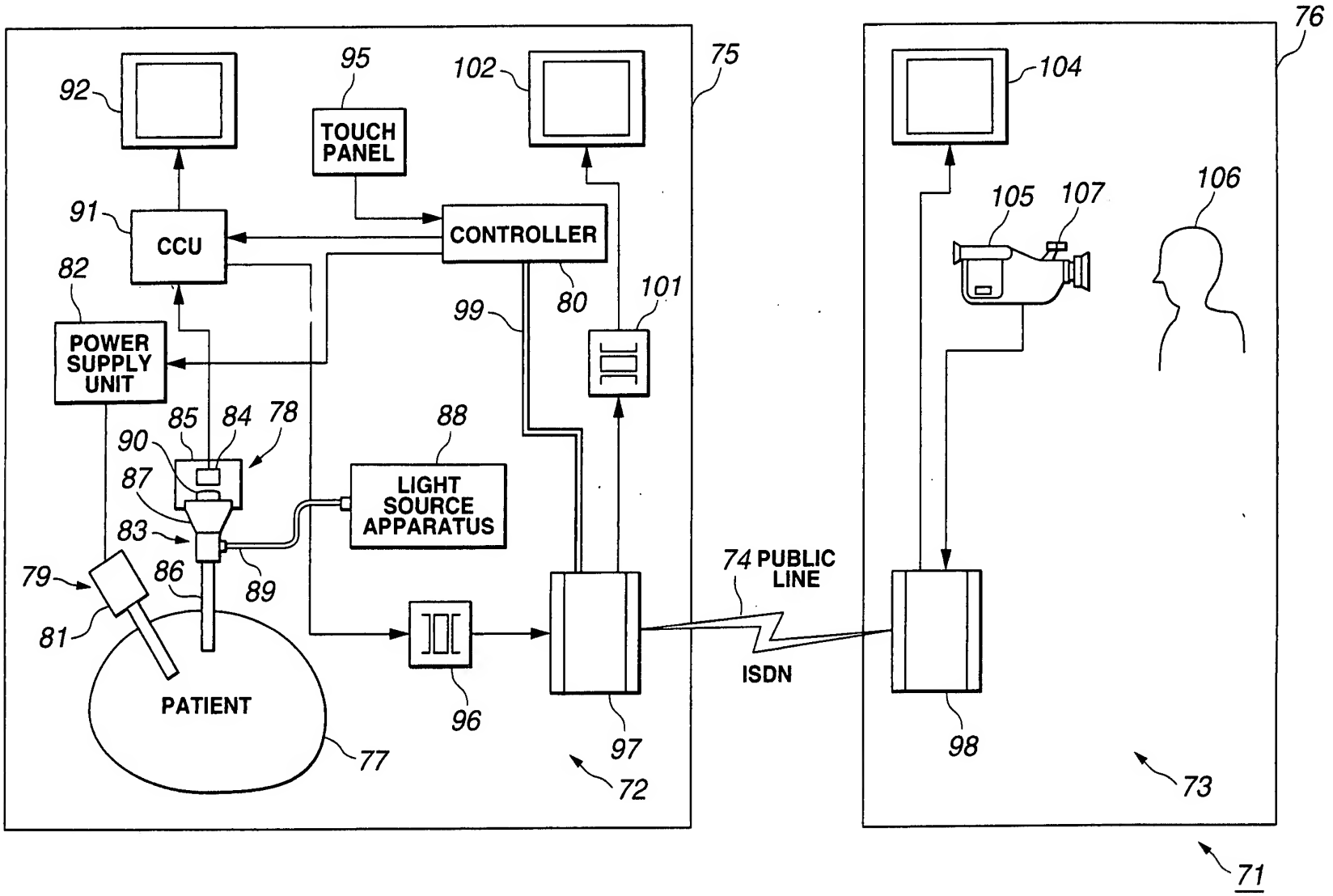

92
95
TOUCH PANEL
102
75
91
CCU
CONTROLLER
82
80
101
99
POWER SUPPLY UNIT
85
84
78
88
90
87
LIGHT SOURCE APPARATUS
83
79
86
89
74 PUBLIC LINE
81
PATIENT
77
96
97
72
ISDN
98
73
71
76
104
105
107
106

FIG.11

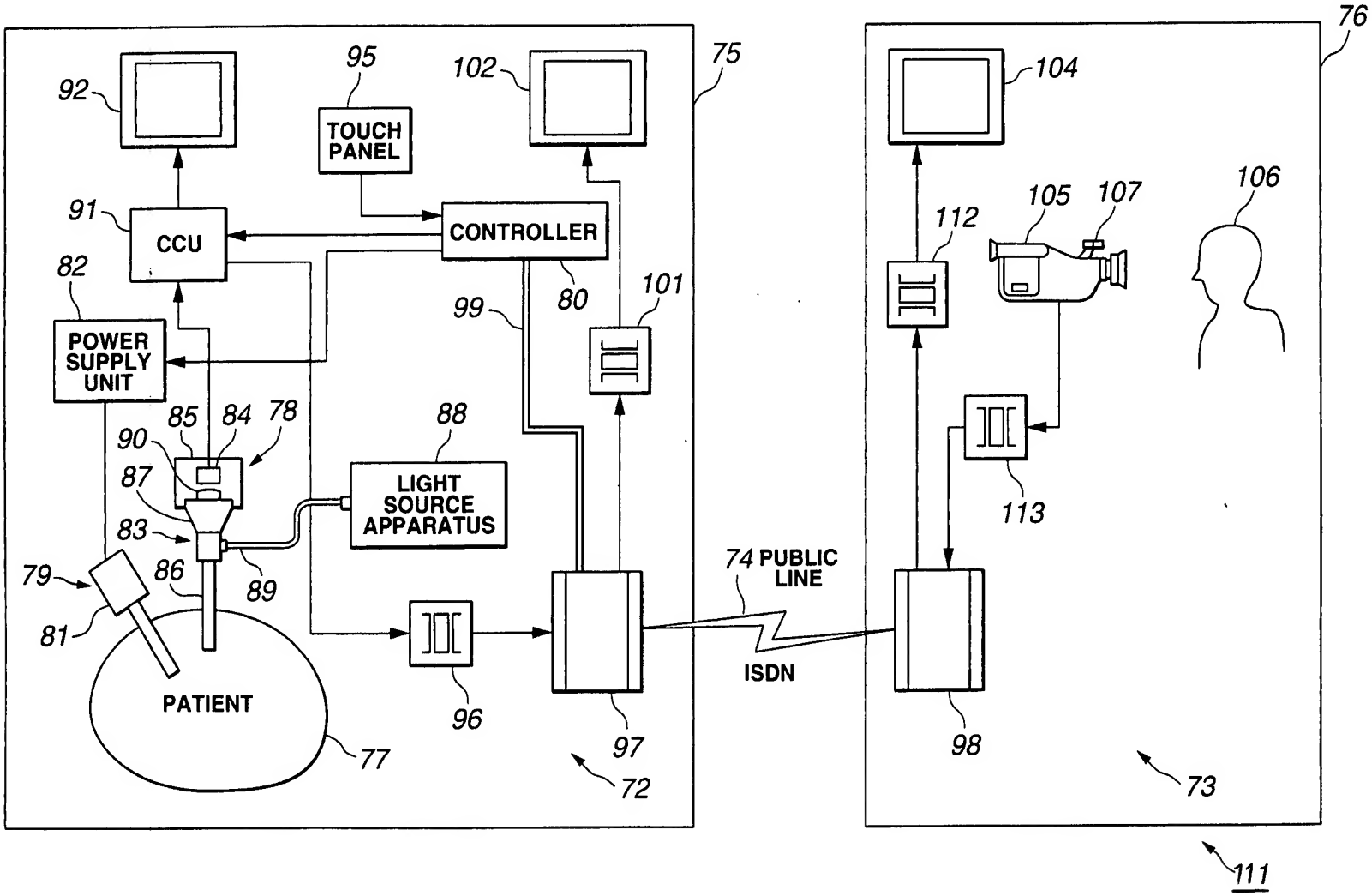

92
95
TOUCH PANEL
102
75
76
104
91
CCU
CONTROLLER
105
107
106
112
82
80
101
99
POWER SUPPLY UNIT
85
84
78
88
90
87
LIGHT SOURCE APPARATUS
113
83
79
86
89
74 PUBLIC LINE
81
ISDN
PATIENT
96
97
98
77
72
73
111

FIG.12

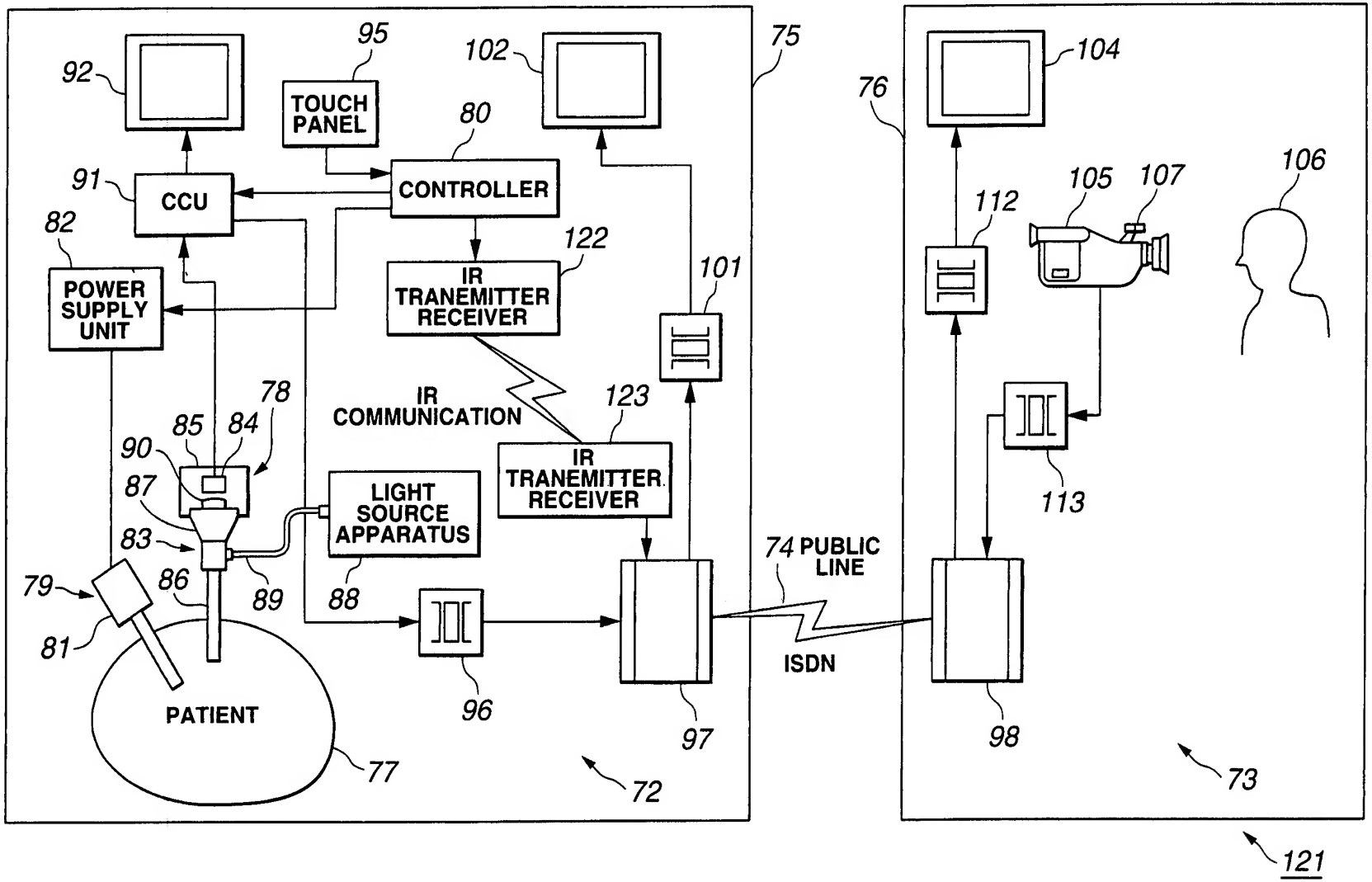

92
95
TOUCH PANEL
102
75
80
CONTROLLER
91
CCU
82
POWER SUPPLY UNIT
122
IR TRANEMITTER RECEIVER
101
IR COMMUNICATION
123
78
85
84
90
87
83
79
86
89
81
LIGHT SOURCE APPARATUS
88
IR TRANEMITTER RECEIVER
PATIENT
77
96
97
72
74 PUBLIC LINE
ISDN
76
104
112
105
107
106
113
98
73
121

FIG.13

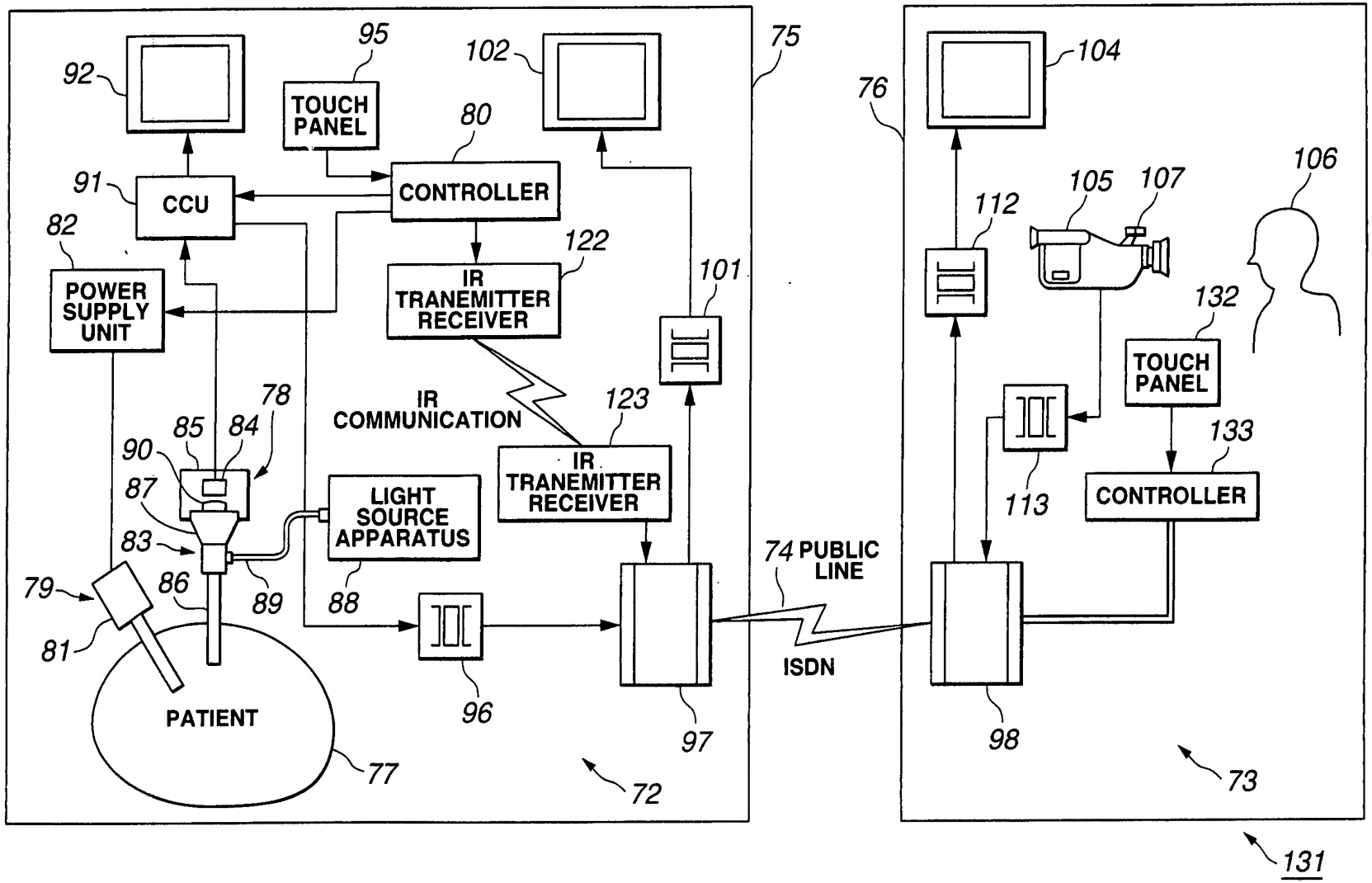

92
95
TOUCH PANEL
102
75
80
91
CCU
CONTROLLER
82
POWER SUPPLY UNIT
122
IR TRANEMITTER RECEIVER
101
IR COMMUNICATION
123
78
85
84
90
87
83
79
81
86
89
88
LIGHT SOURCE APPARATUS
IR TRANEMITTER RECEIVER
PATIENT
77
96
97
72
74 PUBLIC LINE
ISDN
76
104
112
105
107
106
132
TOUCH PANEL
133
113
CONTROLLER
98
73
131

FIG.14

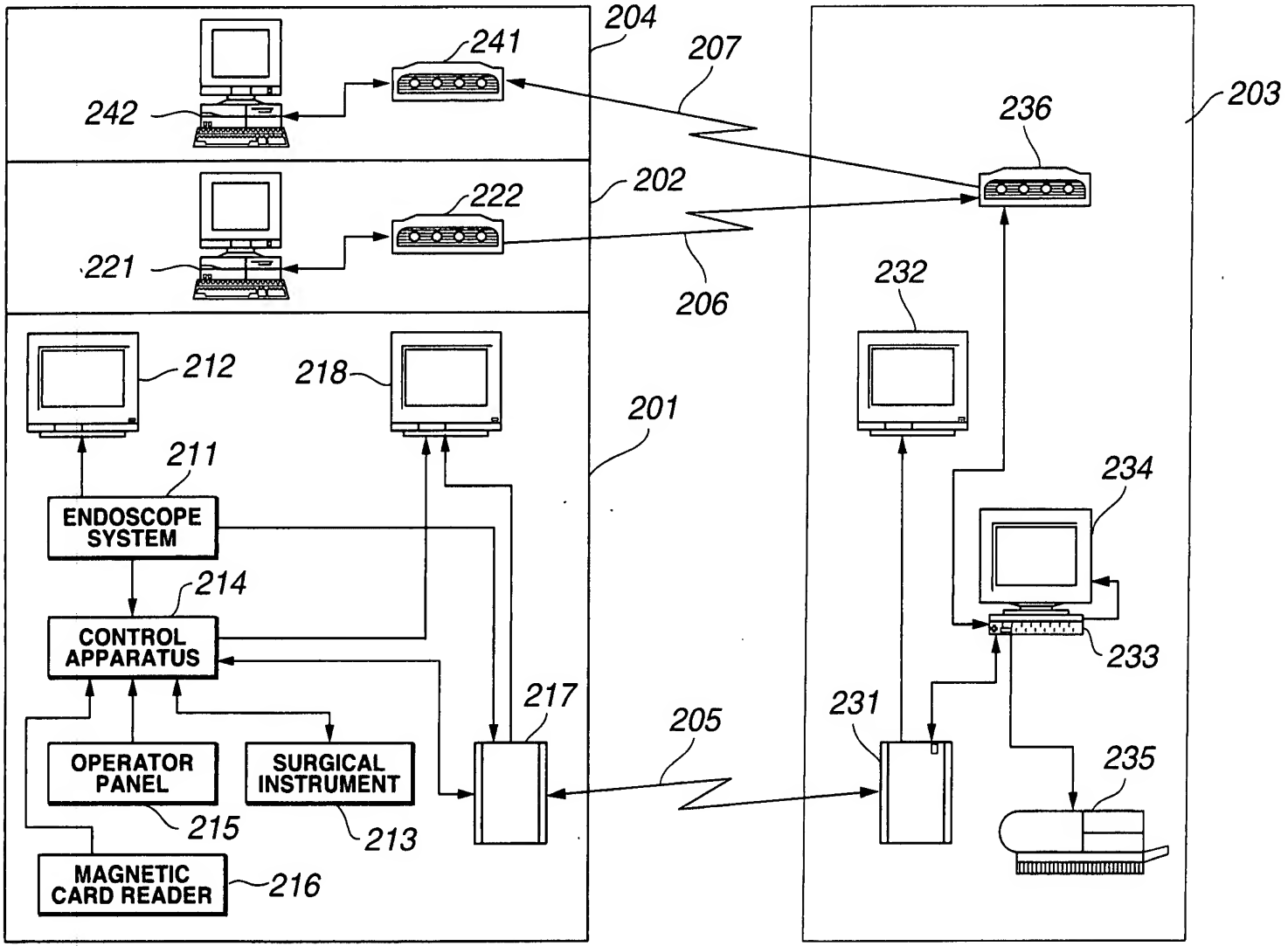

204
241
207
203
242
236
202
222
221
206
232
212
218
201
211
234
ENDOSCOPE SYSTEM
214
CONTROL APPARATUS
233
217
231
205
OPERATOR PANEL
SURGICAL INSTRUMENT
235
215
213
MAGNETIC CARD READER
216

FIG.15

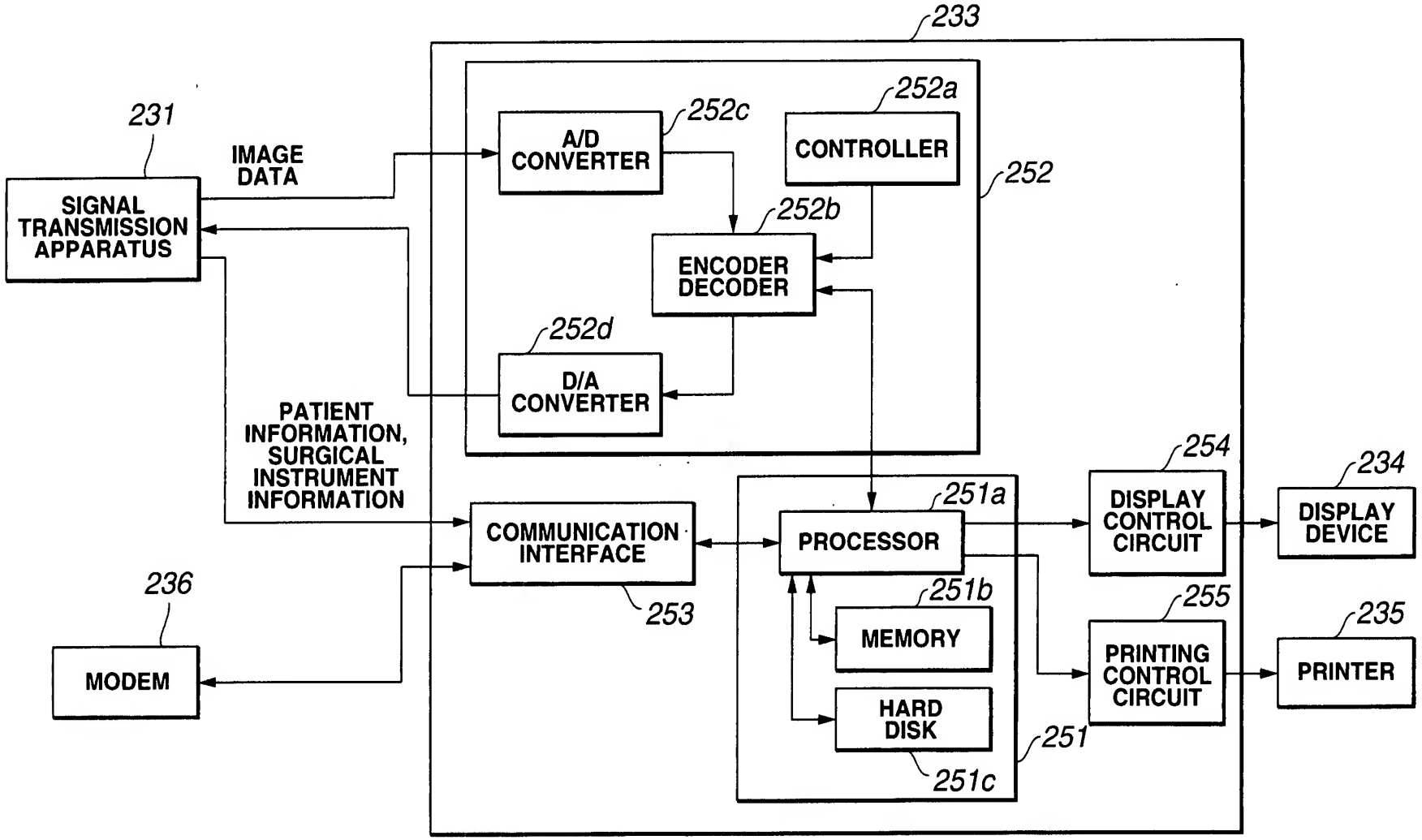

233
231
IMAGE DATA
SIGNAL TRANSMISSION APPARATUS
A/D CONVERTER
252c
CONTROLLER
252a
252
252b
ENCODER DECODER
252d
D/A CONVERTER
PATIENT INFORMATION, SURGICAL INSTRUMENT INFORMATION
COMMUNICATION INTERFACE
253
PROCESSOR
251a
254
DISPLAY CONTROL CIRCUIT
234
DISPLAY DEVICE
236
MODEM
251b
MEMORY
255
PRINTING CONTROL CIRCUIT
235
PRINTER
HARD DISK
251
251c

FIG.16

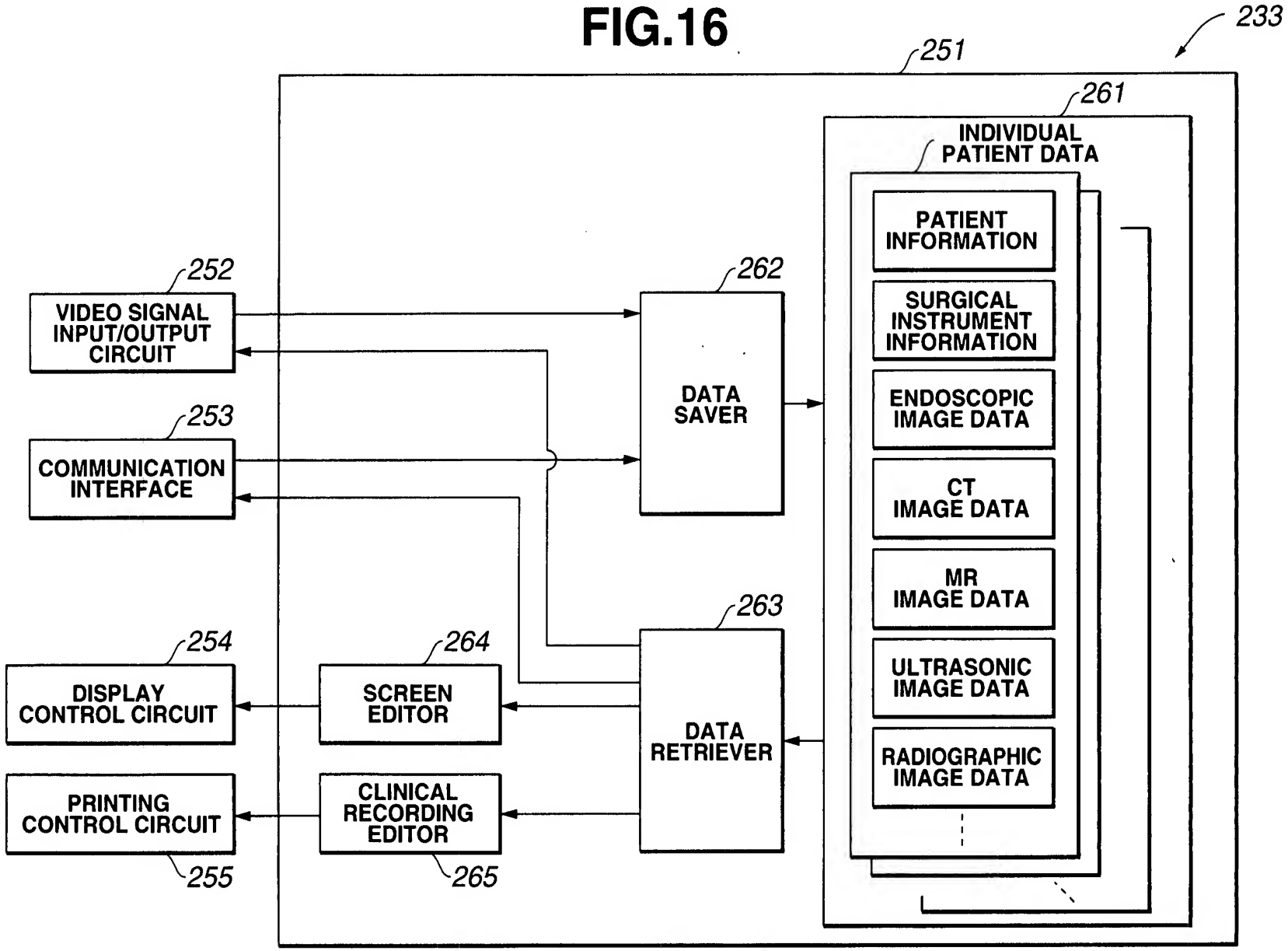

233
251
261
INDIVIDUAL PATIENT DATA
PATIENT INFORMATION
SURGICAL INSTRUMENT INFORMATION
ENDOSCOPIC IMAGE DATA
CT IMAGE DATA
MR IMAGE DATA
ULTRASONIC IMAGE DATA
RADIOGRAPHIC IMAGE DATA
252
VIDEO SIGNAL INPUT/OUTPUT CIRCUIT
253
COMMUNICATION INTERFACE
262
DATA SAVER
263
DATA RETRIEVER
254
DISPLAY CONTROL CIRCUIT
255
PRINTING CONTROL CIRCUIT
264
SCREEN EDITOR
265
CLINICAL RECORDING EDITOR

FIG.17

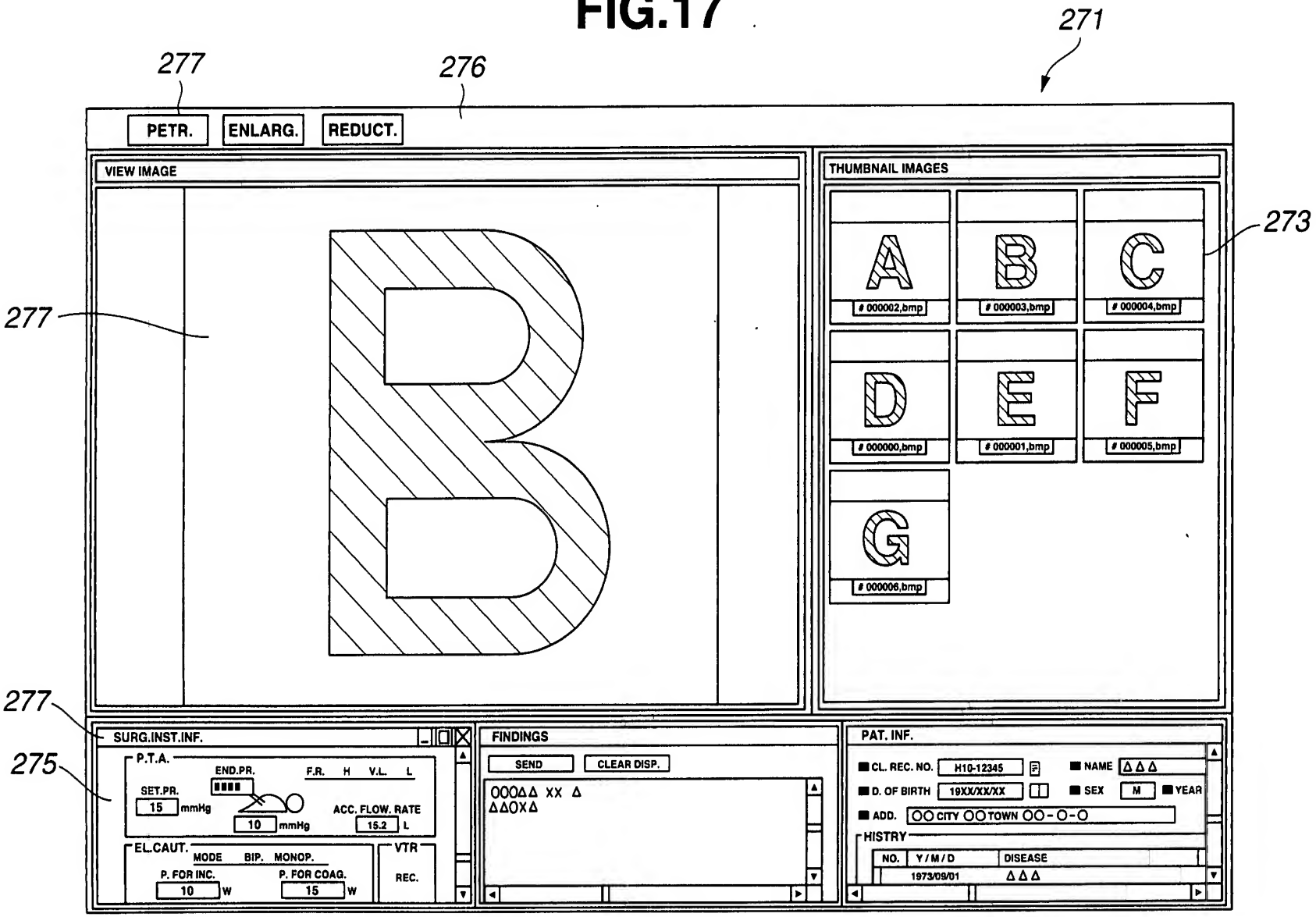

271
277
276
PETR.
ENLARG.
REDUCT.
VIEW IMAGE
THUMBNAIL IMAGES
273
277
000002,bmp
000003,bmp
000004,bmp
000000,bmp
000001,bmp
000005,bmp
000006,bmp
277
275
SURG.INST.INF.
P.T.A.
END.PR.
F.R. H V.L. L
SET.PR.
15 mmHg
10 mmHg
ACC. FLOW. RATE
15.2 L
EL.CAUT.
MODE BIP. MONOP.
P. FOR INC.
10 W
P. FOR COAG.
15 W
VTR
REC.
FINDINGS
SEND
CLEAR DISP.
PAT. INF.
CL. REC. NO. H10-12345 F
NAME ΔΔΔ
D. OF BIRTH 19XX/XX/XX
SEX M YEAR
ADD. OO CITY OO TOWN OO-O-O
HISTRY
NO. Y/M/D DISEASE
1973/09/01 ΔΔΔ

FIG.18

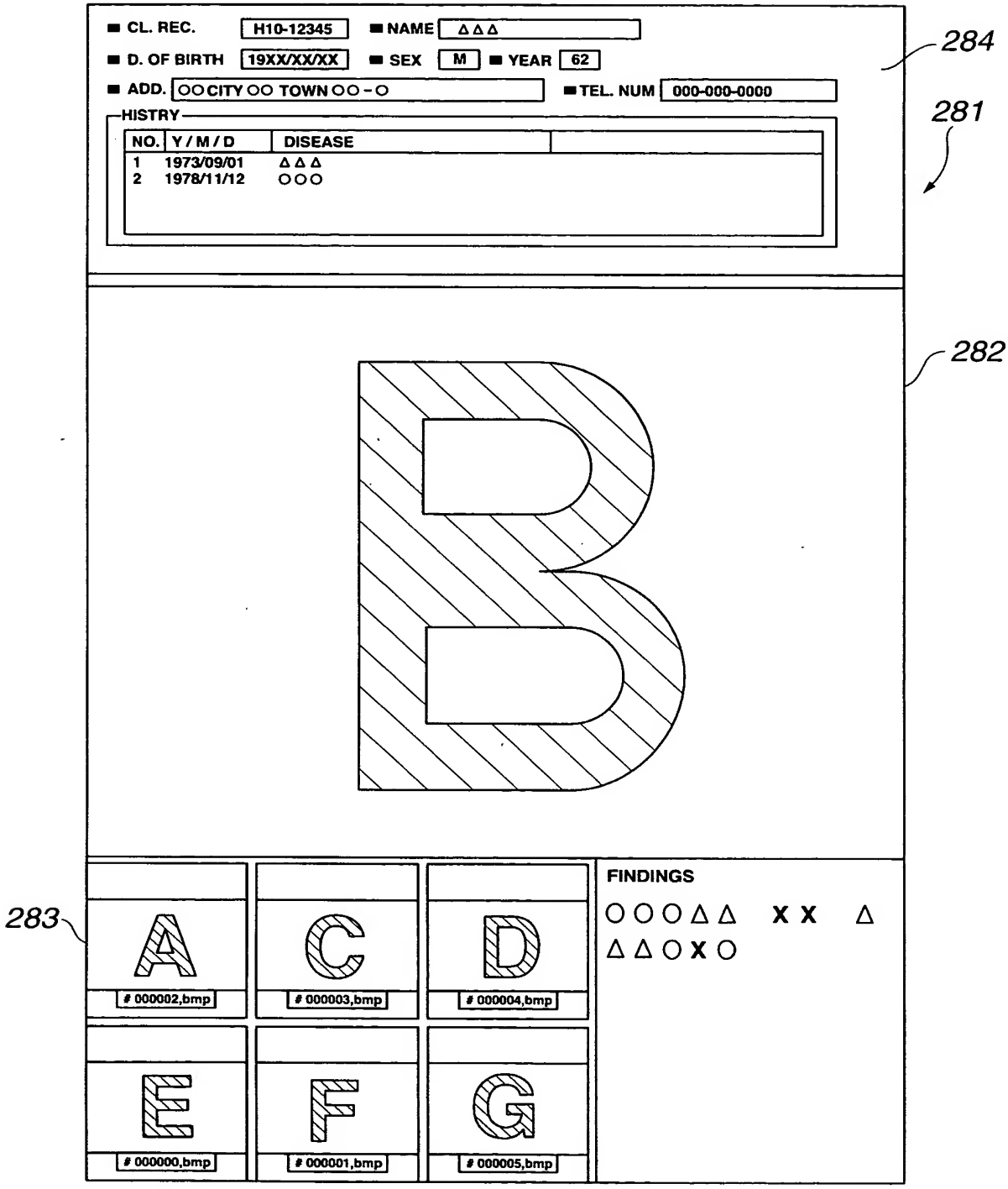

CL. REC.
H10-12345
NAME
△△△
D. OF BIRTH
19XX/XX/XX
SEX
M
YEAR
62
ADD.
○○CITY ○○ TOWN ○○-○
TEL. NUM
000-000-0000
HISTRY
NO.
Y/M/D
DISEASE
1 1973/09/01 △△△
2 1978/11/12 ○○○
284
281
282
283
A
C
D
E
F
G
000002.bmp
000003.bmp
000004.bmp
000000.bmp
000001.bmp
000005.bmp
FINDINGS
○○○△△ XX △
△△○X○

FIG.19

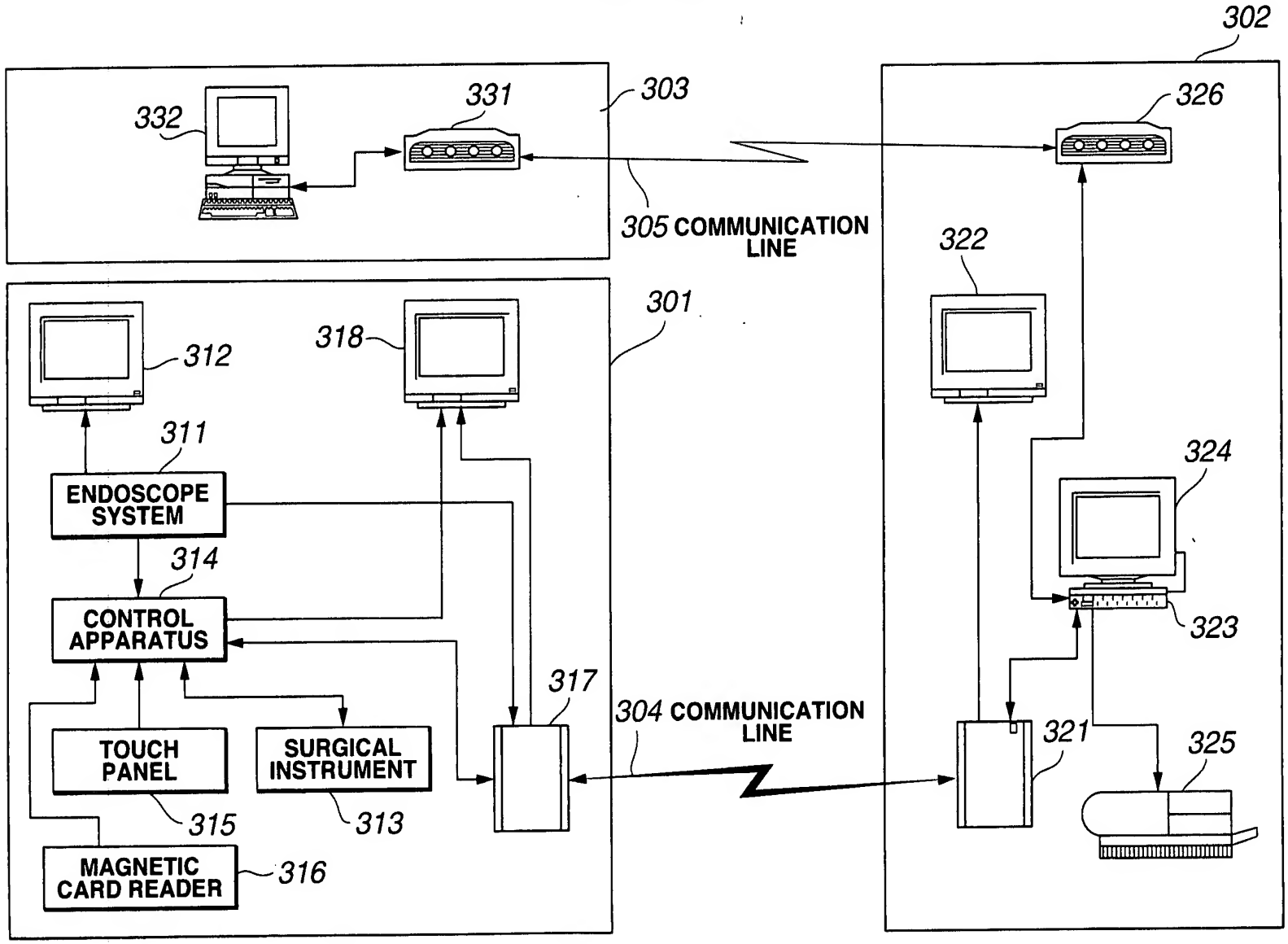

302
303
331
332
326
305 COMMUNICATION LINE
322
301
312
318
311
324
ENDOSCOPE SYSTEM
314
CONTROL APPARATUS
323
317
304 COMMUNICATION LINE
TOUCH PANEL
SURGICAL INSTRUMENT
321
325
315
313
MAGNETIC CARD READER
316

FIG.20

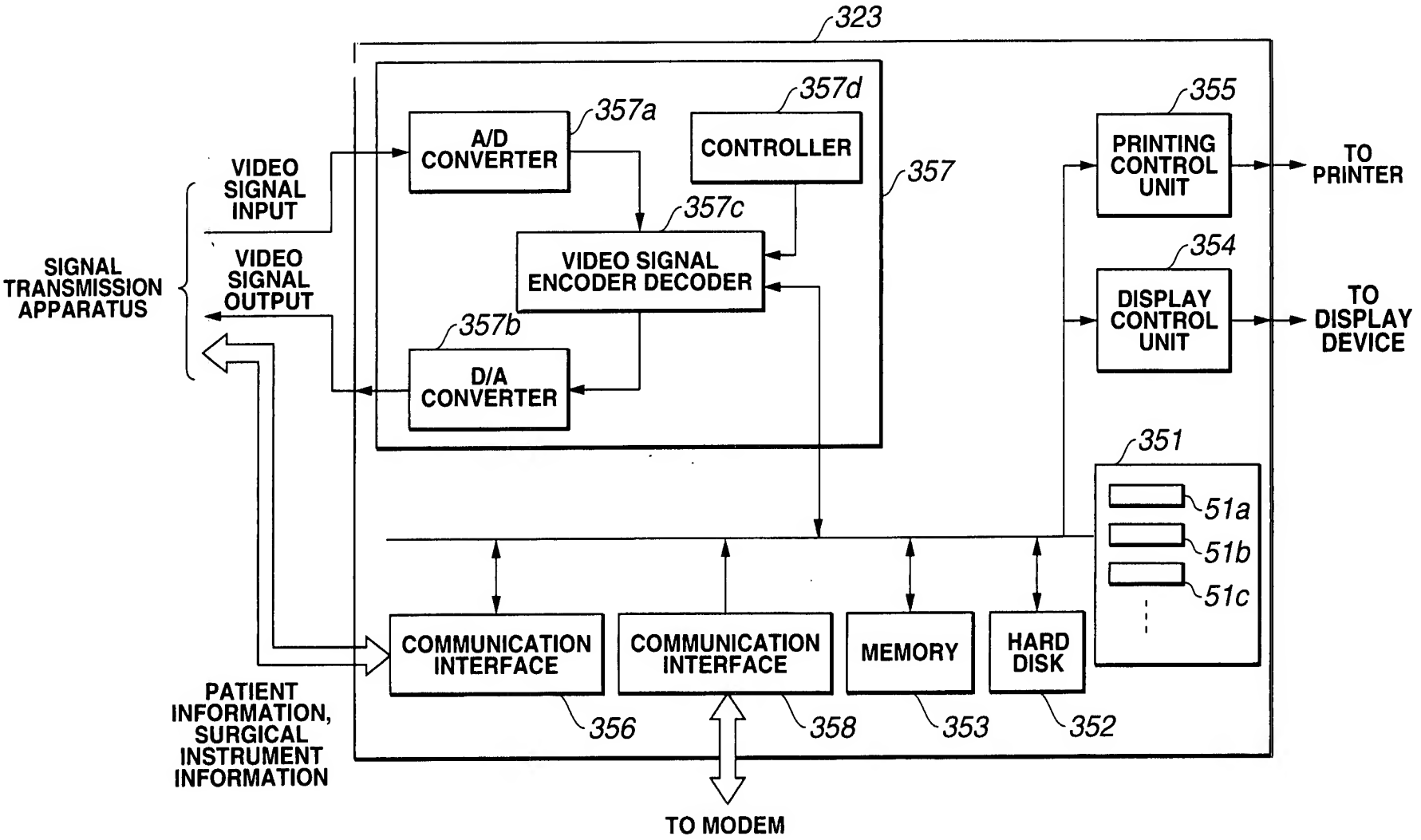

323
357d
357a
355
A/D CONVERTER
CONTROLLER
PRINTING CONTROL UNIT
TO PRINTER
VIDEO SIGNAL INPUT
357
357c
VIDEO SIGNAL ENCODER DECODER
354
SIGNAL TRANSMISSION APPARATUS
VIDEO SIGNAL OUTPUT
DISPLAY CONTROL UNIT
TO DISPLAY DEVICE
357b
D/A CONVERTER
351
51a
51b
51c
COMMUNICATION INTERFACE
COMMUNICATION INTERFACE
MEMORY
HARD DISK
PATIENT INFORMATION, SURGICAL INSTRUMENT INFORMATION
356
358
353
352
TO MODEM

FIG.21

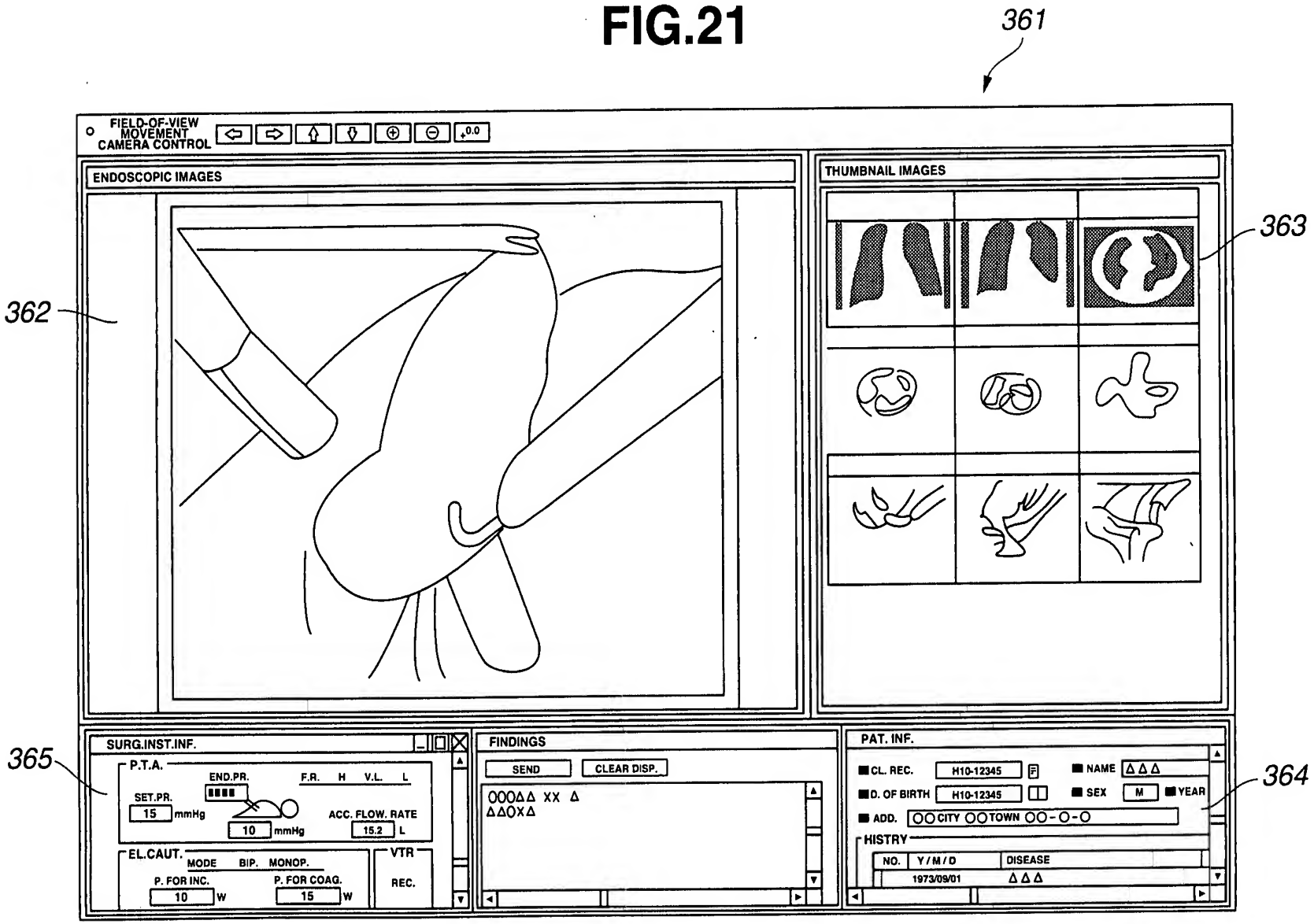
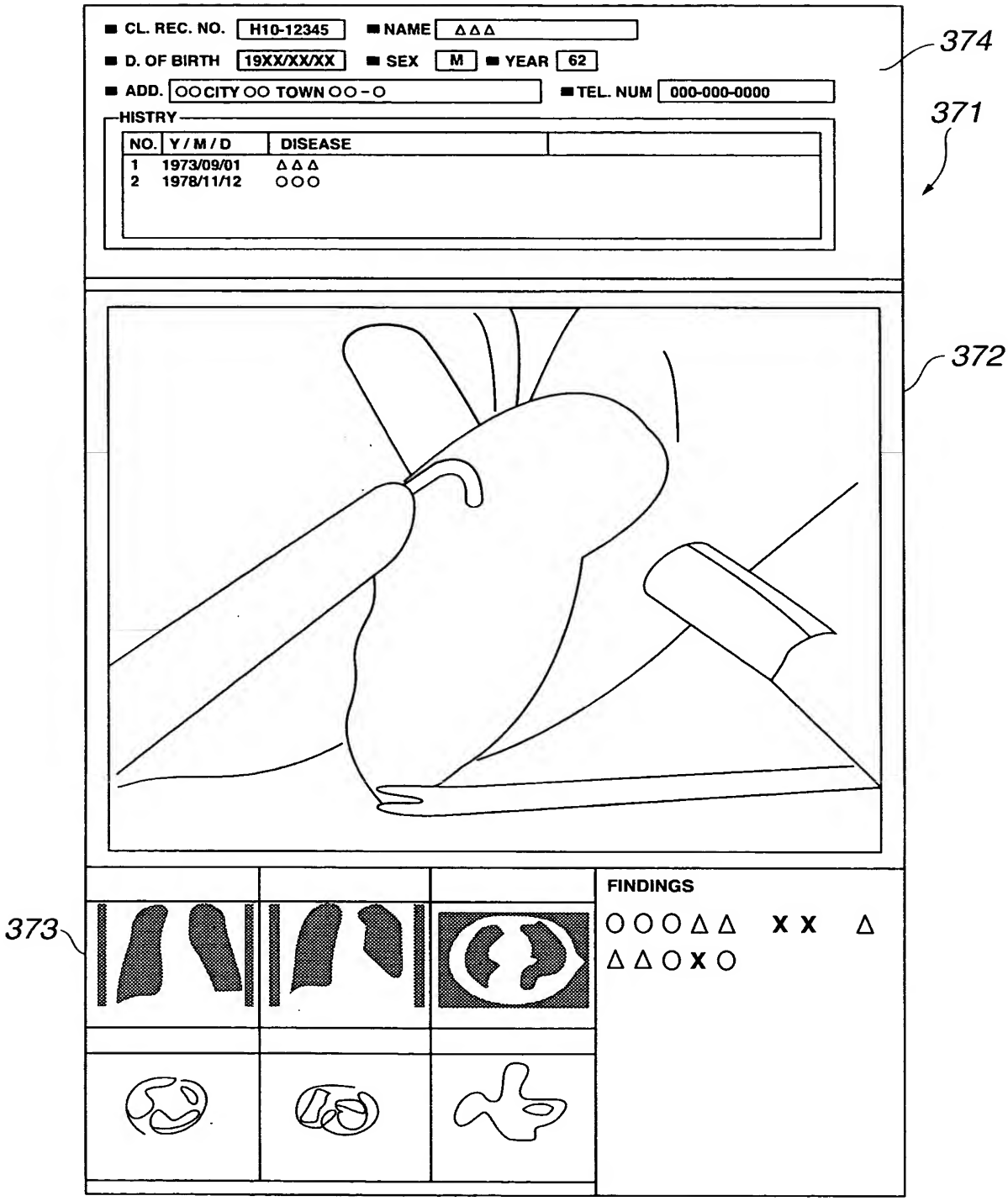

361
FIELD-OF-VIEW MOVEMENT CAMERA CONTROL
ENDOSCOPIC IMAGES
THUMBNAIL IMAGES
362
363
365
364
SURG.INST.INF.
P.T.A.
END.PR.
F.R. H V.L. L
SET.PR.
15 mmHg
10 mmHg
ACC. FLOW. RATE
15.2 L
EL.CAUT.
MODE BIP. MONOP.
P. FOR INC.
10 W
P. FOR COAG.
15 W
VTR
REC.
FINDINGS
SEND
CLEAR DISP.
PAT. INF.
CL. REC. H10-12345
NAME ΔΔΔ
D. OF BIRTH H10-12345
SEX M YEAR
ADD. OO CITY OO TOWN OO-O-O
HISTRY
NO. Y/M/D DISEASE
1973/09/01 ΔΔΔ

FIG.22


CL. REC. NO. H10-12345
NAME ΔΔΔ
D. OF BIRTH 19XX/XX/XX
SEX M
YEAR 62
ADD. OOCITY OO TOWN OO-O
TEL. NUM 000-000-0000
HISTRY
NO. Y/M/D DISEASE
1 1973/09/01 ΔΔΔ
2 1978/11/12 OOO
FINDINGS
OOOΔΔ XX Δ
ΔΔOXO
374
371
372
373